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**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

SEP 10 1997

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

In the Matter of:)	
)	
Federal-State Joint Board on Universal)	CC Docket No. 96-45
Service)	
)	
Forward-Looking Mechanism for High)	CC Docket No. 97-160
Cost Support for Non-Rural LECs)	

REPLY COMMENTS OF GTE SERVICE CORPORATION

GTE Service Corporation and its affiliated domestic telephone operating companies (collectively "GTE")¹ respectfully submit their Reply Comments on the Further Notice of Proposed Rulemaking ("FNPRM") in the above-captioned proceedings.² As GTE and several other commenters have shown, the Hatfield Model produces seriously inaccurate approximations of customer distribution, which in turn lead to an underestimation of the costs of providing universal service.³ In contrast, the

¹ GTE Alaska, Incorporated, GTE Arkansas Incorporated, GTE California Incorporated, GTE Florida Incorporated, GTE Hawaiian Telephone Company Incorporated, The Micronesian Telecommunications Corporation, GTE Midwest Incorporated, GTE North Incorporated, GTE Northwest Incorporated, GTE South Incorporated, GTE Southwest Incorporated, Contel of Minnesota, Inc., and Contel of the South, Inc.

² FCC 97-256 (rel. July 18, 1997).

³ Comments of GTE Service Corporation, CC Docket Nos. 96-45, 97-160 at 5-9 (filed Sept. 2, 1997) ("GTE Comments"); Joint Comments of BellSouth Corporation, BellSouth Telecommunications, Inc., U S WEST, Inc., and Sprint Local Telephone Companies to Further Notice of Proposed Rulemaking Sections III.C.1, CC Docket Nos. 96-45, 97-160, Attachment B (filed Sept. 2, 1997) ("BellSouth, et al. Comments"); Comments of the Rural Utilities Service on Customer Location, CC Docket Nos. 96-45, 97-160 at 3-4 (filed Sept. 2, 1997) ("RUS Comments"); Comments of TDS Telecommunications

(Continued...)

use of grid cells, actual wire center and line count data, as well as geo-code sampling and mapping software in the model adopted by the Commission would produce far more accurate results. The new BCPM seems to incorporate some of these factors, but cannot be fully evaluated until it is made publicly available. Therefore, as explained in its Comments and further discussed below, although GTE urges the Commission to adopt carrier-specific, state-approved engineering models, if the Commission chooses to use a cost proxy model it should incorporate GTE's recommendations and reject the Hatfield Model.

I. GRID CELLS ARE THE MOST APPROPRIATE UNIT FOR ESTIMATING COSTS. (Section III.C.1.a)

In its Comments, GTE urges the Commission to use grid cells of 1/100th of a degree of latitude and longitude as the basic geographic unit for estimating costs in a proxy model.⁴ Grid cells of this size are similarly shaped and are the smallest level for which data are readily available. Another advantage of using grid cells is that they are small enough to allow use of data without further estimation to a sub-grid cell level and thus do not require determination of data below the level of observation. Data for grid cells can be aggregated to determine costs for a larger area with no need to use clustering algorithms.

(...Continued)

Corporation on Customer Location Issues; CC Docket Nos. 96-45, 97-160 at 3 (filed Sept. 2, 1997) ("TDS Comments").

⁴ GTE Comments at 4-5.

In contrast, the Hatfield Model uses CBGs as its basic geographic unit and estimates the dispersion of customers *within* the CBG. For small CBGs, this estimation may be sufficient to provide reasonably accurate results. However, for larger CBGs, particularly those in rural areas, the Hatfield Model employs a clustering algorithm which, as detailed in the GTE Comments and the Comments of BellSouth et al.,⁵ leads to gross inaccuracies in customer distribution and plant costs. The new BCPM Model seems to incorporate a grid cell approach that would lead to significantly improved estimates of customer distribution over both past BCPM versions and the Hatfield Model.⁶ However, until this new BCPM version is available for public review, GTE cannot comment on it in detail.

Some parties suggest that the Commission use either wire centers⁷ or distribution areas⁸ as the basis for estimating costs. Because each ILEC has different network configurations and distribution areas, these areas vary for each carrier and are not suitable for inclusion in a national model. However, use of wire centers and distribution areas would be helpful in the context of carrier-specific models which, as

⁵ GTE Comments at 5-9; BellSouth, et al. Comments, Attachment B.

⁶ BellSouth, et al. Comments at 4-13.

⁷ See, e.g., Comments of Bell Atlantic on III.C.1 Platform, CC Docket Nos. 96-45, 97-160, Attachment at 1-2 (filed Sept. 2, 1997).

⁸ Comments of Ameritech Regarding Customer Location Aspects of Cost Model, CC Docket Nos. 96-45, 97-160 at 3-5 (filed Sept. 2, 1997) ("Ameritech Comments").

GTE has stated, will produce significantly more accurate results than any cost proxy model.⁹

II. ALTHOUGH USEFUL FOR RANDOM SAMPLING, GEO-CODING IS INFEASIBLE ON A NATIONAL SCALE. (Section III.C.1.b)

Several commenters confirm that geo-coding will be helpful to determining customer distribution.¹⁰ In particular, using random geo-coded data samples would likely improve accuracy.¹¹ However, as GTE explained in its Comments, geo-coding all households on a national basis is impractical because of the significant costs and computing power that would be required.¹²

AT&T and MCI state that future versions of the Hatfield Model will incorporate geo-coding initially to determine customer cluster characteristics and later to map "cable strands to each individual customer location."¹³ This approach poses two problems. First, geo-coding to determine more accurate clustering will not prevent the Hatfield Model from seriously underestimating the feeder and distribution plant needed to serve customers scattered throughout a CBG, as is evident from Figure 2 in GTE's

⁹ GTE Comments at 1-2.

¹⁰ RUS Comments at 4; TDS Comments at 12-14; Comments of Aliant Communications Co., CC Docket Nos. 96-45, 97-160 at 2 (filed Sept. 2, 1997); Ameritech Comments at 6-7.

¹¹ GTE Comments at 11-12.

¹² *Id.*

¹³ Comments of AT&T Corp. and MCI Telecommunications Corporation on Customer Location Issues, CC Docket Nos. 96-45, 97-160 at 8 (filed Sept. 2, 1997) ("AT&T/MCI Comments").

Comments.¹⁴ Second, as explained above, geo-coding all households nationally will not be possible in the foreseeable future and is fundamentally in conflict with the Hatfield Model's basic approach of representing a CBG as a box. Incorporating national geo-coding would require rewriting the majority of the Model's code and therefore necessitate a complete reexamination of the Model by the interested parties and the Commission.

III. VERIFICATION OF A COST PROXY MODEL THROUGH COMPARISON WITH ACTUAL DATA IS CRITICAL TO ENSURING ACCURATE COST ESTIMATES. (Section III.C.1.b - c)

AT&T and MCI assert that there is no need to use either actual loop lengths¹⁵ or actual wire center line counts¹⁶ to verify the accuracy of a cost proxy model. In particular, these parties argue that using actual loop lengths to verify the accuracy of a cost model is inconsistent with the Commission's "scorched node approach [which] defines points of concentration from which to design an efficient forward-looking telephone network [and] may produce loop lengths that differ (both longer and shorter) from those in the existing network."¹⁷ This statement demonstrates AT&T's and MCI's fundamental misunderstanding of the purpose of a forward-looking proxy model. A forward-looking cost proxy model is designed to estimate the costs of providing service using available facilities without regard to historical investment. AT&T and MCI

¹⁴ GTE Comments at 9.

¹⁵ AT&T/MCI Comments at 10.

¹⁶ AT&T/MCI Comments at 13.

claim that such a model should estimate the costs of providing service using a hypothetical network that includes only the most current technologies. As GTE has repeatedly explained, such a model will never fully compensate a carrier for the costs of providing universal service and will work an unconstitutional taking without compensation.¹⁸

AT&T and MCI also want to put the burden on ILECs "to explain the derivation and source of their embedded numbers, and why these numbers might differ from efficient cost model calculations."¹⁹ They have it backwards. ILECs have built their networks over many years using the most efficient technologies available to serve customers. Loop lengths in particular are determined by the location of customers vis-à-vis lakes, rivers, mountains, and other natural and man-made barriers and other complex factors which cannot be accounted for in a model. The proponents of any proxy model, which by definition determines network design without considering any of the multitude of necessary factors, should be forced to account for any differences between the network predicted by the model and actual network architecture.

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¹⁷ AT&T/MCI Comments at 10 (footnote omitted).

¹⁸ GTE's Comments, CC Docket No. 96-45 at 25-31 (filed Dec. 19, 1996); GTE's Reply Comments, CC Docket No. 96-45 at 23-28 (filed Jan. 10, 1997). Estimating costs of providing service with a hypothetical model will work only if the costs of building the network, or modifying the existing network to include new technologies, are included in the costs of providing service.

¹⁹ AT&T/MCI Comments at 11.

Similarly, "AT&T and MCI question the state members' proposal that models should always 'match within ten percent actual wire center line counts,' even though the Hatfield Model generally does close within the 10 percent factor."²⁰ They state that "[t]he Hatfield Model already includes a user adjustable line count normalization process to ensure the cost estimate is for the actual number of lines served by a wire center – if the incumbent LEC has made that information available."²¹

Contrary to AT&T's and MCI's claims, GTE demonstrated in its Comments that the Hatfield Model produces line count results varying by more than ten percent from actual counts for the substantial majority of wire centers in Washington State²² and for more than half of GTE's wire centers nationwide.²³ GTE fails to understand how any normalization process can properly account for the costs of so many missed lines. Moreover, despite AT&T's and MCI's statements that the wire centers omitted by the Hatfield Model are usually de minimis in size, lacking any working lines, new, or not actually a public wire center,²⁴ GTE's examination of its serving areas shows that this is not the case.

GTE believes that AT&T and MCI resist the use of actual data to verify Hatfield Model results because of the clear deficiencies in the Model's algorithms. In fact, these

²⁰ AT&T/MCI Comments at 13 (citation and footnote omitted).

²¹ AT&T/MCI Comments at 13.

²² GTE Comments, Exhibit 3.

²³ GTE Comments at 14.

²⁴ AT&T/MCI Comments at 13-14.

carriers accuse ILECs of "cherry picking of Hatfield Model results that have the greatest discrepancy from historic investment."²⁵ Such statements merely acknowledge that the Hatfield Model produces wildly inaccurate results. Any cost proxy model adopted by the Commission must be shown to produce reasonably accurate cost estimates in almost all cases with few exceptions. Otherwise, the Commission will not succeed in satisfying the Telecommunications Act's requirement of "sufficient" universal service funding.²⁶

IV. CONCLUSION

Carrier-specific, state-approved engineering models will allow the Commission to take account of individual circumstances affecting different LECs and will produce the most accurate cost estimates. However, if the Commission decides to use a cost proxy model instead, it must clarify that a forward-looking cost model is based on existing networks, not a hypothetical network embodying the most advanced technologies which does not exist. The use of grid cells as the basic geographic unit and geo-coding of data samples will improve the accuracy of the cost estimates of a proxy model.

²⁵ AT&T/MCI Comments at 11 (footnote omitted).

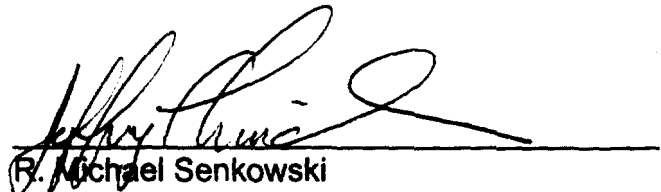
²⁶ 47 U.S.C. § 254(b)(5).

Moreover, for the reasons explained above, GTE urges the Commission to require that its model withstand verification with actual data and to reject any claim that validation is unnecessary.

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wireless companies

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